Functional Description

5

Section 5

explains the machine principle and describes its function in normal conditions.

Furthermore it describes the structure and function of individual assemblies.

Section 5

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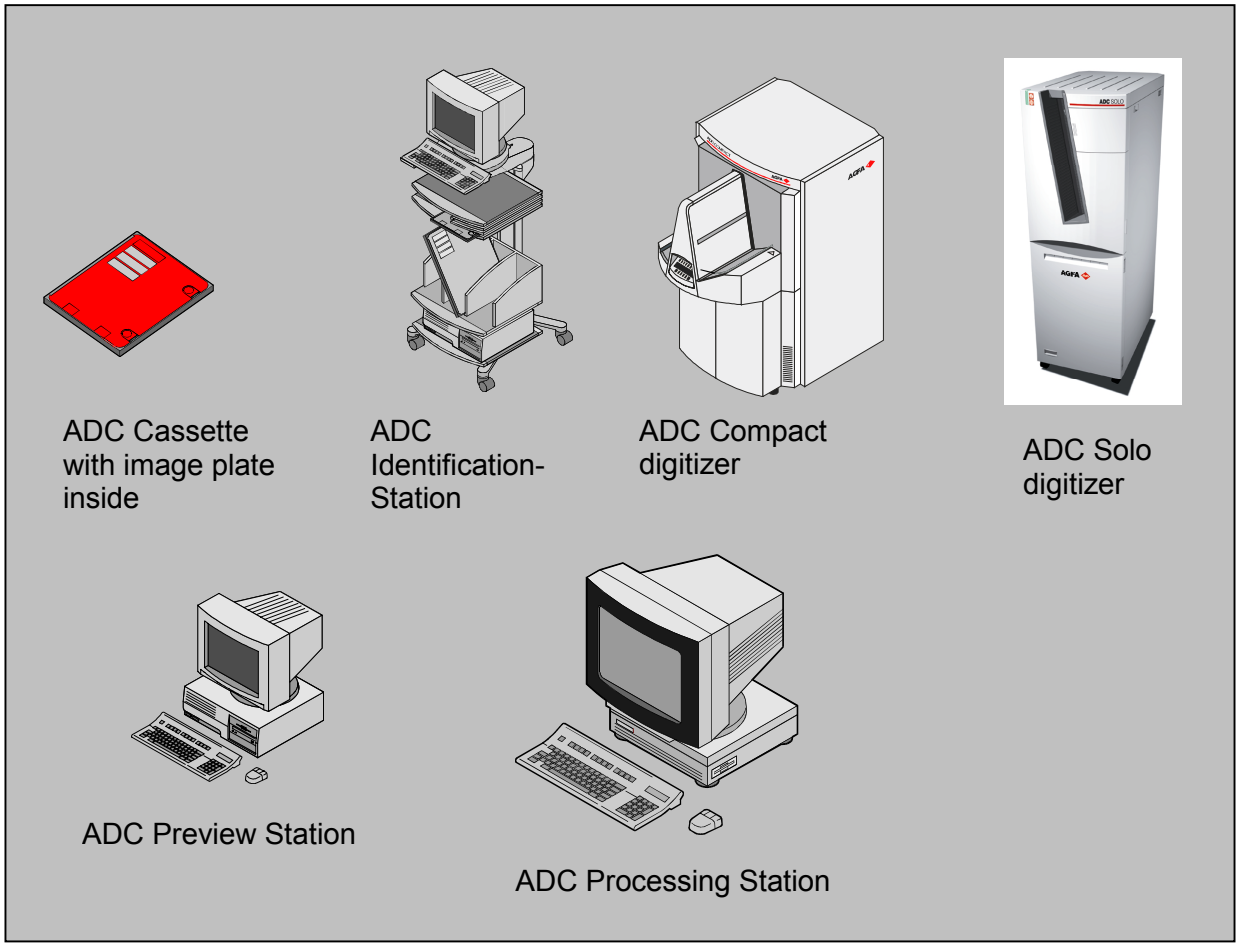
1 System Overview

This chapter gives a short overview of the complete ADC system. Further on, the internal functionality of the ADC Processing Station is discussed.
For a description of the user related topics please refer to the ADC User manuals.

1.1 ADC System



System components

Image Plate	The image plate takes the place of the X-ray film in a conventional system. It receives the X-Ray radiation and “stores” a latent image. The image plates can be reused thousands of times. The actual restriction of utilization is the mechanical robustness.
ADC Cassette	The ADC cassette is the “container” for the image plate. During the handling outside the Digitizer (e.g. exposing the plate) the image plate is in the cassette. It is only opened inside the Digitizer. The ADC cassette has an internal chip card which holds the cassette, patient, examination and routing data belonging to a certain x-ray exposure.
Identification Station	The Identification Station is used to write the cassette, patient, examination and routing data to the cassette chip. This data can be entered manually or by retrieving the data from a Hospital or Radiology Information System (HIS/RIS). By means of a so called Identification Tablet (ID-Tablet) the data is transferred to the chip. Writing and reading is done by means of radio

frequency in a contactless manner.
The Identification software is an AGFA product and is running on MS-Windows based operating systems (WIN95/98, WinNT4.0)

Digitizer

The Digitizer is used to read the latent image in the image plate. After the ADC cassette is exposed and identified it is inserted into the Digitizer. The Digitizer reads the data on the cassette chip, opens the cassette, takes out the image plate and scans it. The latent image on the image plate is stimulated by means of a laser beam to emit light according to x-ray exposure.
The data from the cassette chip is used to set the scan parameters correctly (e.g. speed class, image plate size, etc.) for this individual x-ray exposure.
The emitted light is converted into voltage and then digitalized into a 12bit, square root compressed raw image. This image is transmitted together with the chip data on the fly via Ethernet to the Processing Station. A backup of that image is made on the internal hard disk in parallel to retransmit the image in case of transmission problems. The output format of the Digitizer is DICOM SCU-CR.
After scanning / transmitting is finished the image plate is erased with very bright light to make it ready for the next exposure. It is put back into the cassette and a status flag on the cassette chip is set from “EXPOSED” to “ERASED”. The cassette is returned to the user and is ready for the next examination.

Processing Station

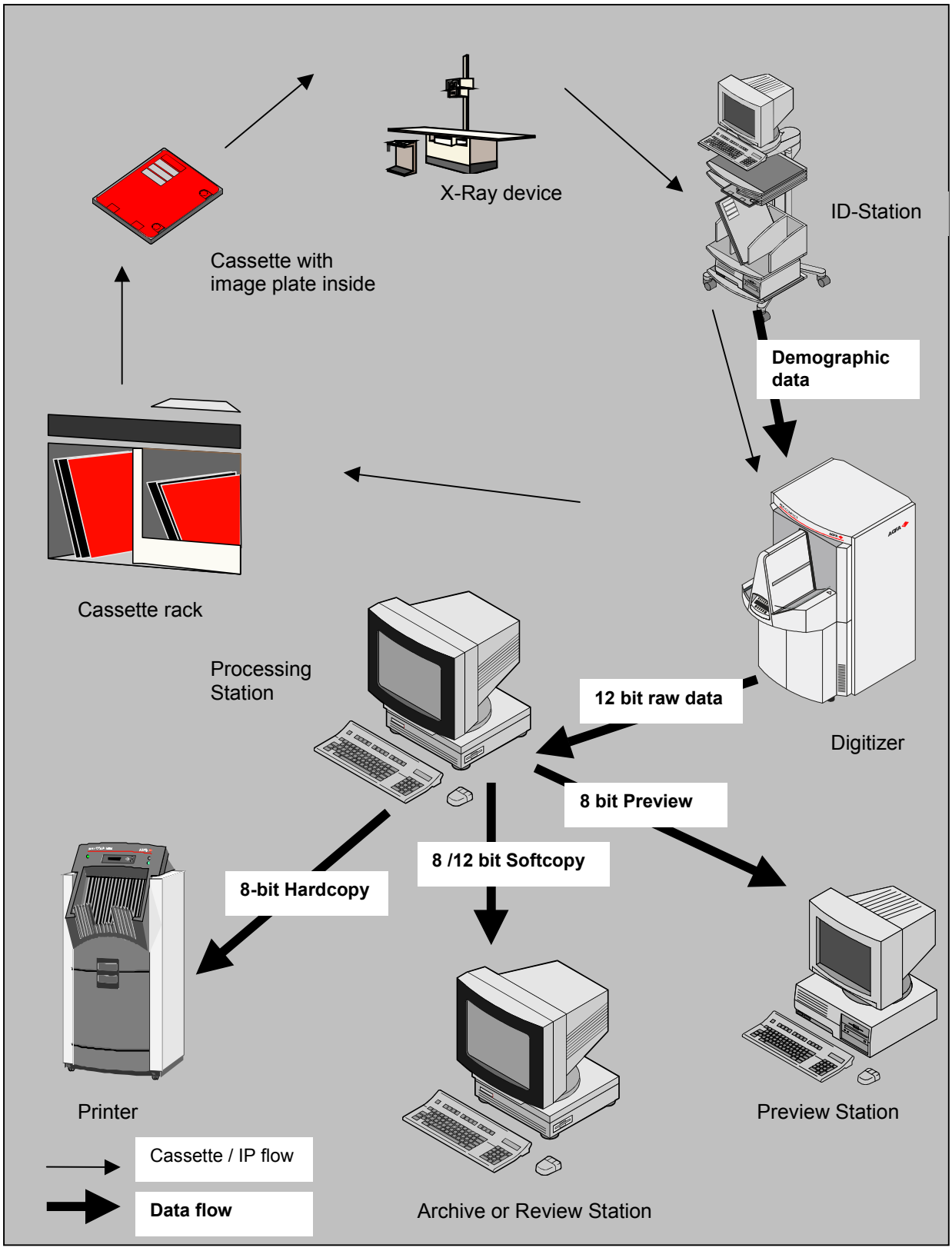
The Processing Station receives the raw image from the Digitizer. Every incoming image runs through an image processing. The processed images are stored on the internal hard disk(s) on the Processing Station.
However, the Processing Station only provides short term storage. The final archiving must be realized either by hardcopies or a PACS. Further on, the Processing Station decodes the routing data and sends the image data to the selected destinations (e.g. Preview, Printer, PACS). The Preview Station has the highest priority in the sending list
For the Processing Station a lot of licensed software options (e.g. Interactive Image Processing, Annotation, Smart Print, etc.) exist.
The Processing Station is a Solaris (UNIX- OS) based SUN workstation with the **M**edical **I**mage **M**anagement **O**perating **S**ystem of **A**GFA (MIMOSA) installed.

Preview Station

The Preview Station software is not a mandatory part of the system. However, in most of the installations this feature is used to get a fast view on the just scanned image. This allows the user to release the patient rather quickly from the examination session.
Several Preview Stations can be served by one Processing Station.
The Preview Station software may run on the same PC-Hardware as the Identification Station software, but it may also run on a separate PC.
The Preview software is an AGFA product and runs on MS-Windows based operating systems (WIN95/98, WinNT4.0).

1.2 System Data Flow

For more information about the ADC-System operation refer to the ADC User manuals as well.



System Data Flow

2 ADC Processing Station

The Processing Station is the center of the ADC System. There all the data (image and demographic) arrives and the whole administration happens. The following main tasks can be distinguished:

- Reception of images (DICOM SCP-CR)
- Automatic processing of the images according to the examination
- Storage administration for the images on the local hard disks (only for short term storage)
- Demographic data management by ORACLE relational data base management system (rdbms)
- Preparing and transmitting image data for output to different destination types (e.g. HCP (DICOM SCU Print), including automatic routing.
- Queue management
- Intuitive User Interface to do all kinds of image manipulations for the user (e.g. change image processing, apply annotation, system monitoring and set up, configurable search and filter criteria, view and edit patient demographics, print layout configuration system, etc.).
- Error and warning message management with logging functionality.

2.1 Technical Specifications of the Processing Station

2.1.1 Hardware

2.1.1.1 Basic System Hardware

- SUN Workstation HW with floppy drive, CD-ROM drive and at least one hard disk inside. The Workstation HW is used according to the current models SUN offers.
- Standard Brightness Monitor (21”, 8-bit grayscale monitor, always used with 1152 x 900 resolution).
- DAT Tape streamer (SCSI) from SUN.

2.1.1.2 Optional Hardware

- Additional image hard disks (max 27GB are supported).
- High Brightness monitor (21”, 8 bit-grayscale monitor, always used with 1152 x 900 resolution).
- Uninterruptable Power Supply (UPS) with 700 VA.
- ADC Test Phantom Set.

2.1.2 Software

2.1.2.1 Basic Software Modules

- Sun OS (Solaris – version depends on application and hardware release).
- ORACLE referential database management system (rdbms).
- XWINDOWS .
- MOTIF / CDE desktop manager.
- AGFA application MIMOSA (**M**edical **I**mage **M**anagement **O**perating **S**ystem of **A**GFA) or Autoprocessing software.
- Service Tools (Maintenance Menu).

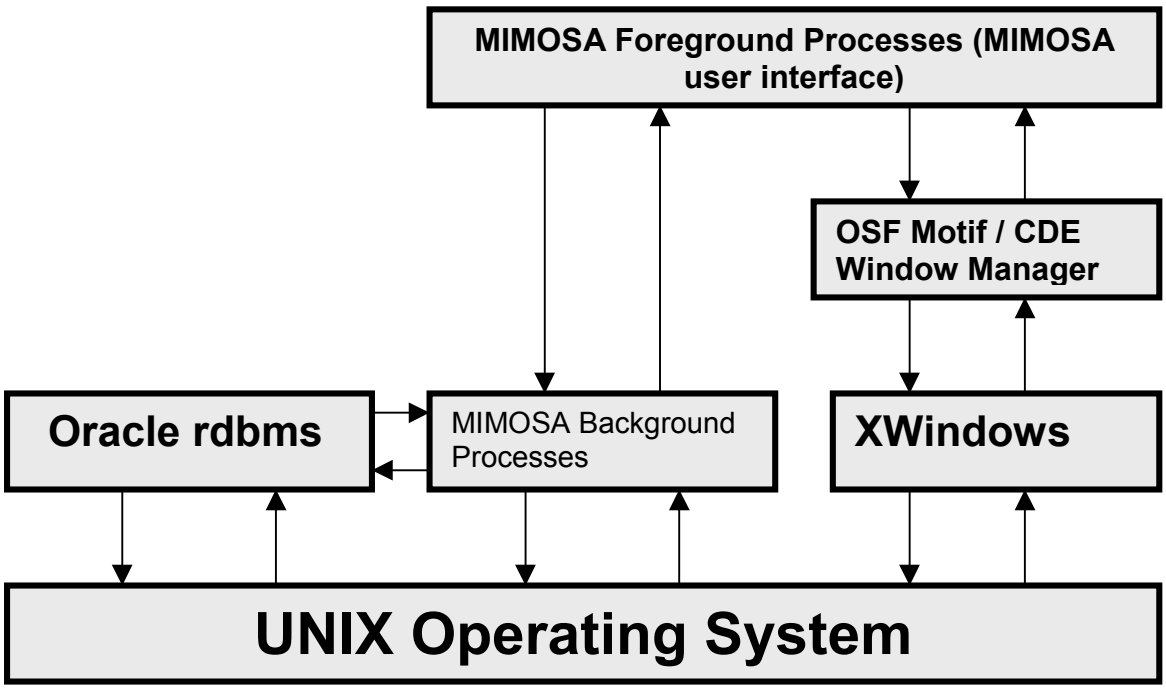
2.1.2.2 Optional (AGFA) Software

- ADCC Interactive Processing SW
- ADCC URO/TOMO Software
- ADCC Black Border Software
- ADCC Annotation Software
- ADCC Softcopy Toolkit
- ADCC DICOM Store Connection
- ADCC Full Leg/Spine SW
- ADCC Pediatric SW
- ADCC Dental SW
- ADCC Dose Monitoring SW
- ADCC Auto QC SW
- ADCC Smart Print SW

The list of options may vary during the time. The above mentioned option maybe released for different software versions. In addition, the list shows all options planned at the moment this document was created. Please follow the news distributed by AGFA to check what is released and what not.

2.2 Software Architecture

The Processing Station is based on SUN Hardware and runs on the UNIX operating system Solaris also provided by SUN Microsystems.
The “Xwindows” software provides the windows environment for easy utilization of the MIMOSA user interface. The functionality is enhanced by CDE (**C**ommon **D**esktop **E**nvironment) and the OSF Motif window manager respectively.
The management of the demographic data is done by a rdbms (**r**elational **d**ata **b**ase **m**anagement system) from ORACLE.
The MIMOSA software is the AGFA part of the software running on the Processing Station. The rest is standard software from different vendors (SUN Microsystems, ORACLE,etc.).



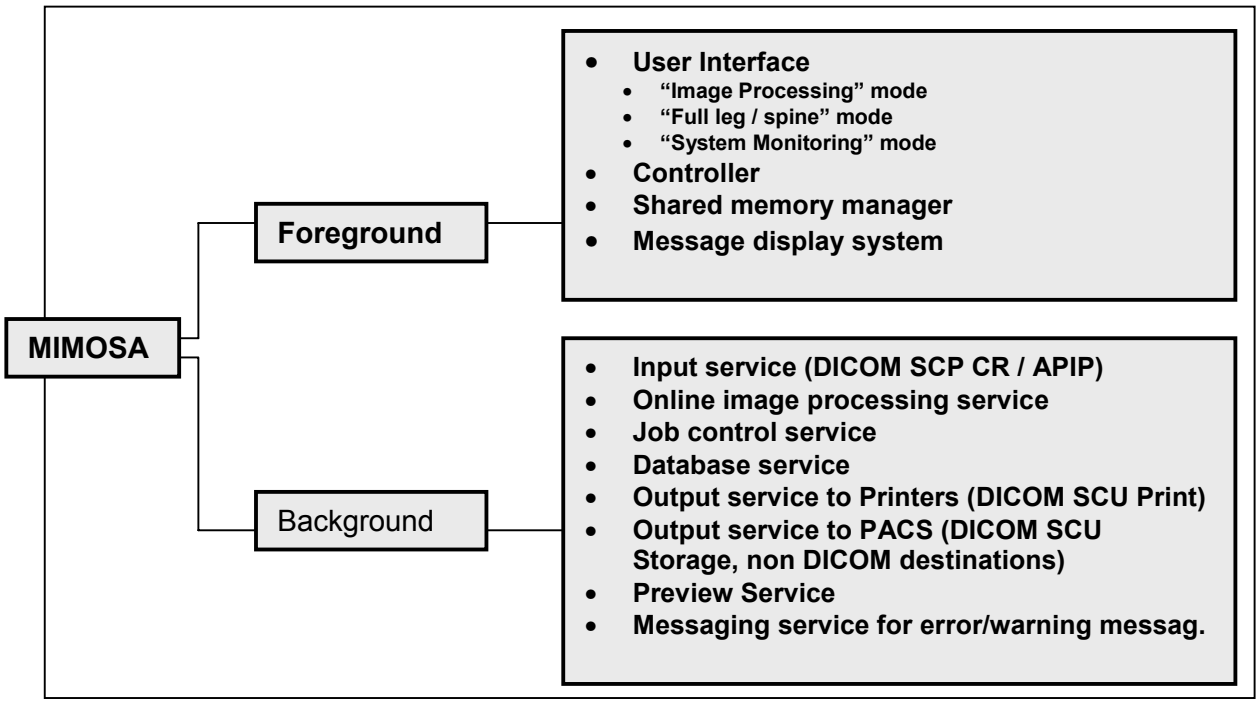
Processing Station software architecture

2.2.1 MIMOSA Architecture

The MIMOSA software is the AGFA application running on the Processing Station. MIMOSA stands for **M**edical **IM**age **O**perating **S**ystem of **A**GFA. The ORACLE rdbms is adapted to the needs of the MIMOSA software, i.e. it provides the structure to store / retrieve the demographic data.
The MIMOSA-SW can be split into two major parts:

- The foreground processes
- The background processes

The foreground processes are the part that the user sees and interacts with. The background processes contain image processing-, database-, communication- and system management software and are not visible to the user. The following diagram gives an overview of the MIMOSA software modules:



MIMOSA architecture

2.2.1.1 Foreground Processes

The foreground processes strongly depend on that the background processes are running. The background processes provide the services for the user interactions. There are four main processes.

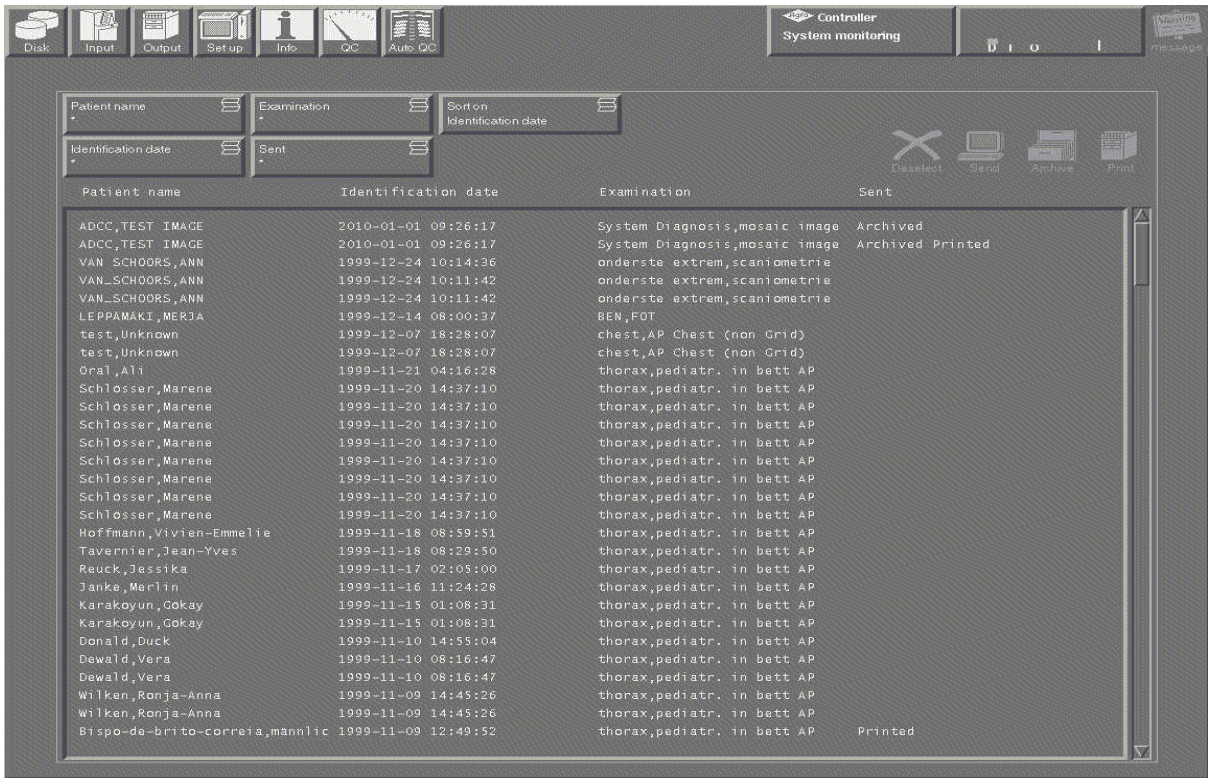
- User Interface
- Controller
- Shared Memory Manager
- Message Display system

For an exact description of the User functions refer to the user manuals as well.

2.2.1.1.1 User Interface

The User Interface mainly is the module the user works with. It comprises of:

- The image thumbnail browser
- The QS- or “OPEN Image” screen for image manipulation
- Image reprocessing and geometric manipulations
- Print management
- Possibilities to configure the User Interface
- Queue management
- Viewing of demographic data
- Sorting and filtering of certain exams
- Annotation possibilities
- Measurement features
- Stitching images together
- Creating print layouts

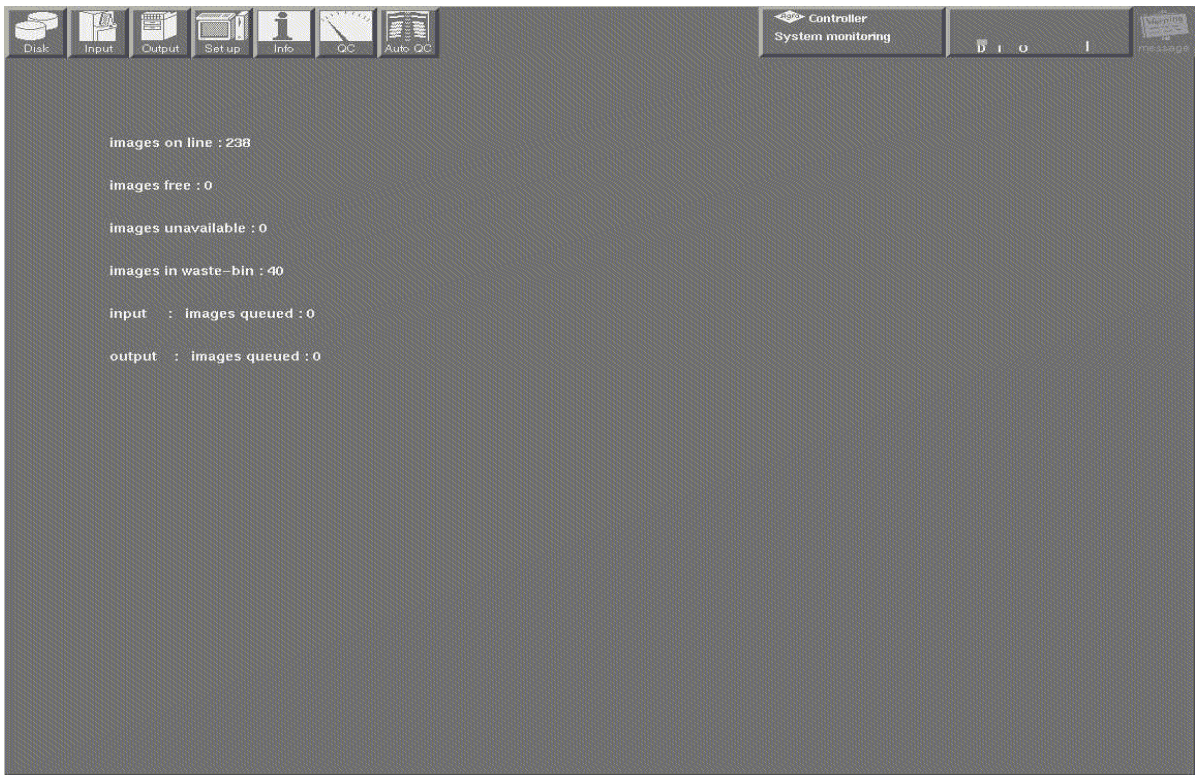


Basic User Interface with only the Autoprocessing option setup

The features of the User Interface may vary depending on which options are installed and which SW-version you have installed on your Processing Station.

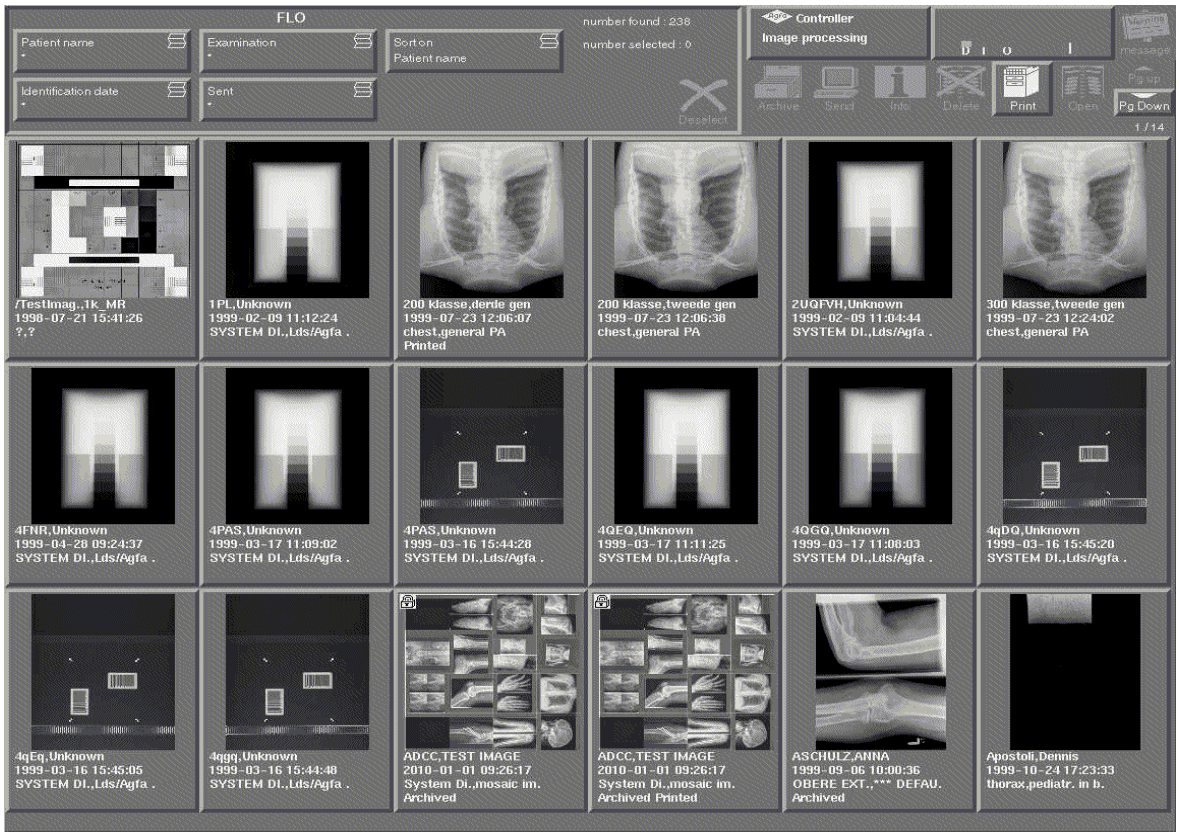
The User Interface splits up into three main modules:

1. The “System Monitoring” module. It is represented by a process called “IRC_system”. For further explanation of the “ System Monitoring ” module see the User Manuals as well.

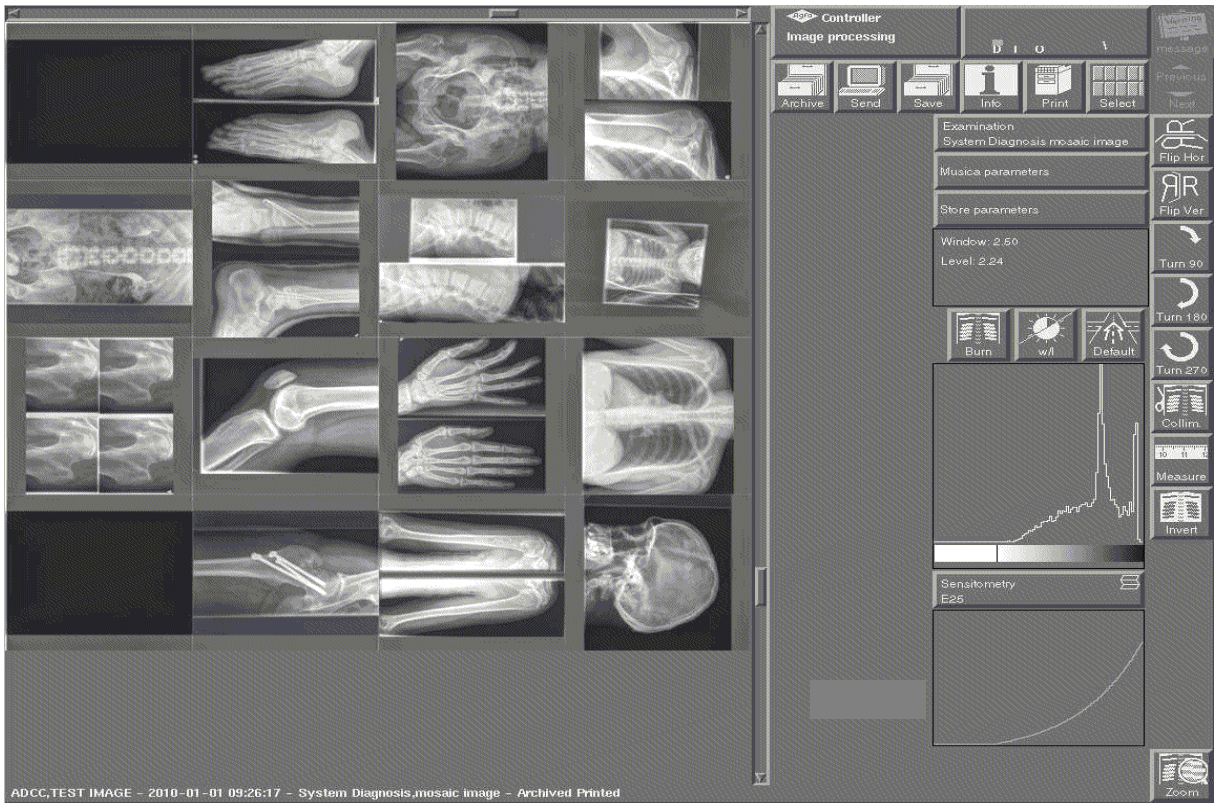


“System Monitoring” Module

2. The “Interactive Processing” module (optional). It is represented by a process called “IRC_advanced”. This module mainly features two displays – the “Image Thumbnail” Browser and the “QS” or “Image Open” Screen. For further explanation of the “ Interactive Processing ” module see the User Manuals as well.

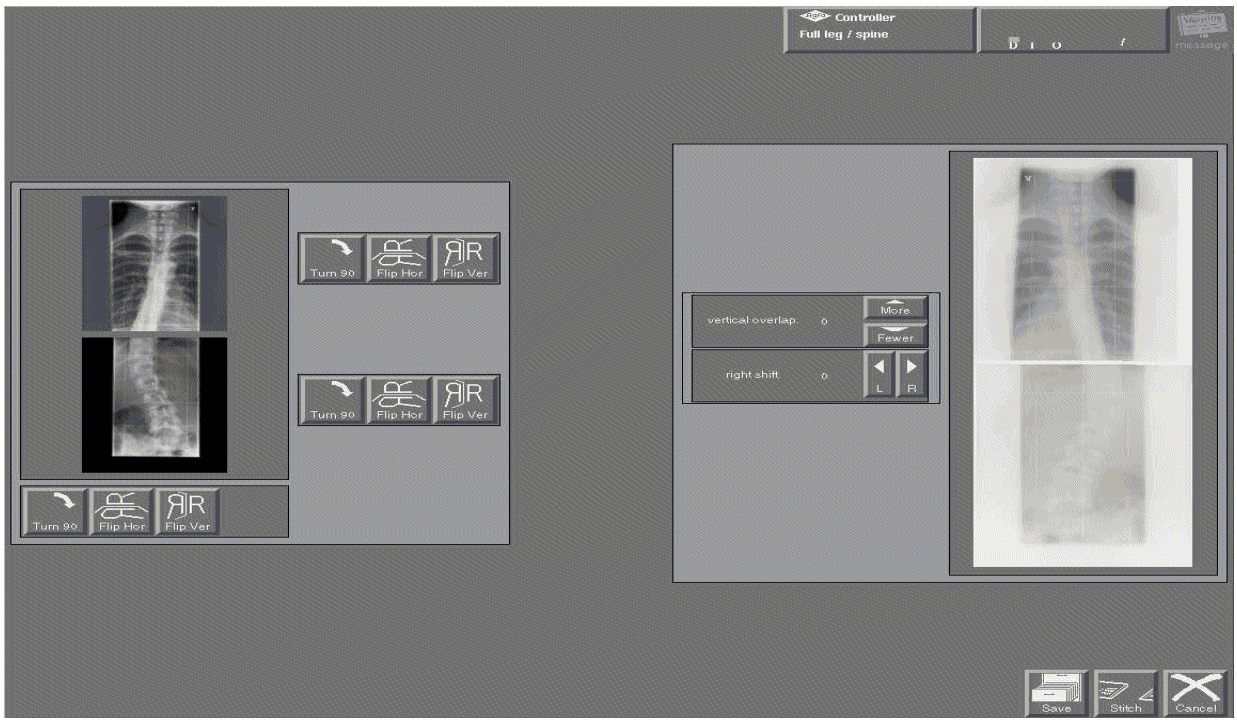


“Interactive Processing” Module - “Image Thumbnail” Browser



“Interactive Processing” Module - “Image Open” Screen

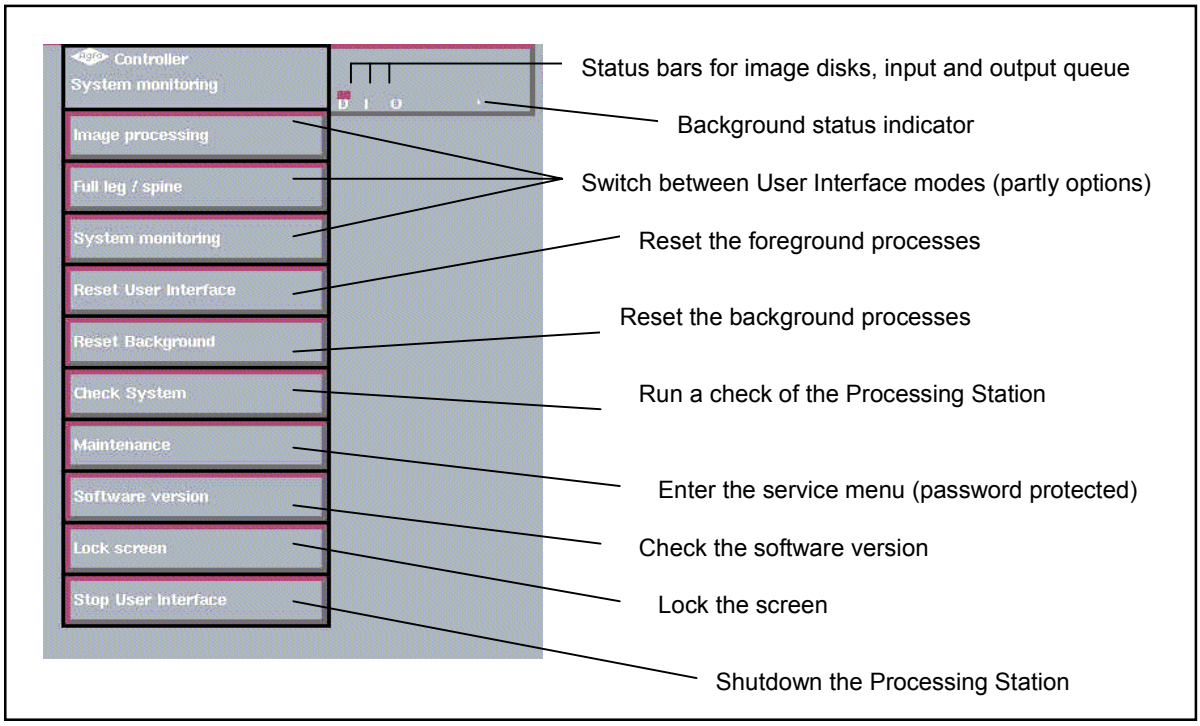
3. The “Full leg / spine” module (optional). It allows to “stitch” different examinations together and store / print it on film. This allows to depict the complete body of a human being on film.
The “Full leg / spine” module is represented by a process called “IRC_stitcher”. For further explanation of the “ Full leg / spine ” module see the User Manuals as well.



“Full leg / spine” module

2.2.1.1.2 Controller

The Controller is a startup and monitoring instance for all the foreground processes. It takes care that the foreground processes are started up in the right sequence. In addition, it will reset a module immediately, if it crashes for some reason. The Controller is represented by the process “IRC_controller”.



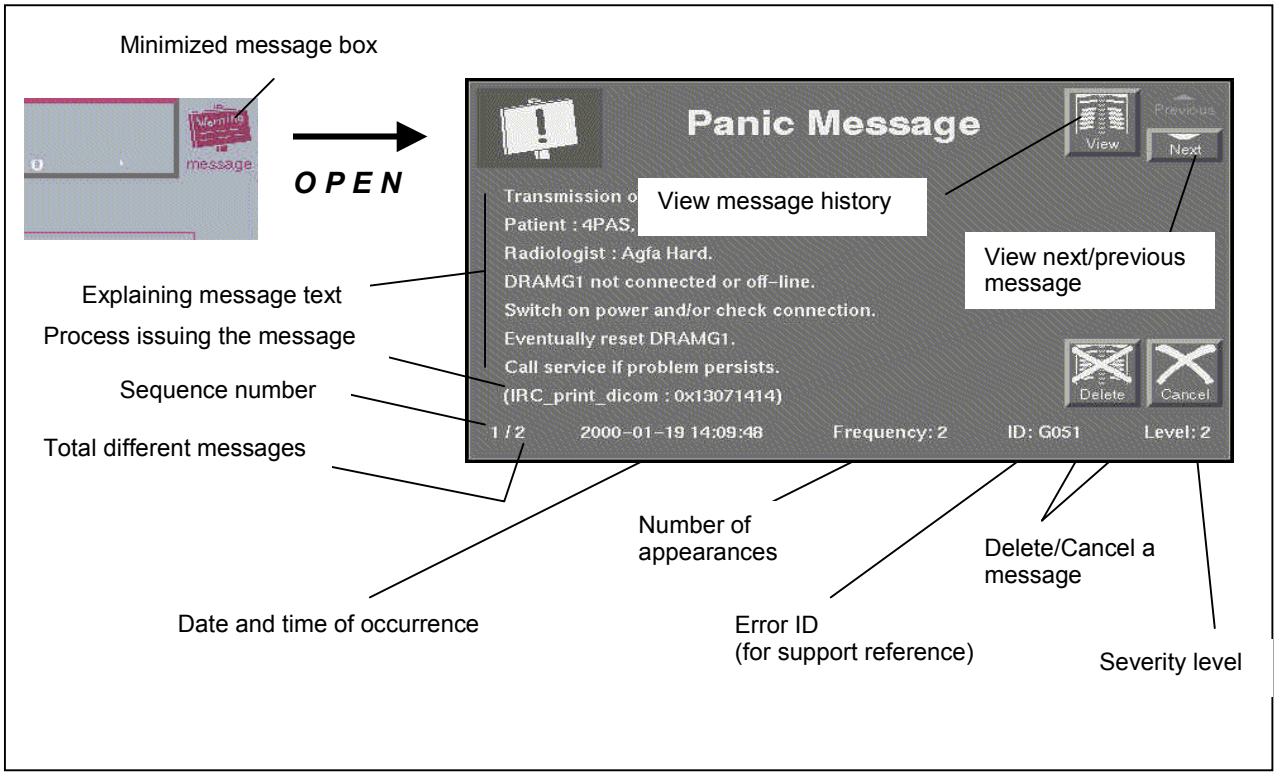
“Controller” pull down menu

2.2.1.1.3 Shared Memory Manager

The Shared Memory Manager allocates and rearranges RAM for the User Interface. This means that when the User Interface starts memory for all possible thumbnail images is allocated. The Shared Memory Manager knows the maximum number of images that may be stored locally on the Processing Station. According to this number RAM is allocated.
The process which represents the Shared Memory Manager is called “IRC_shm_manager”.

2.2.1.1.4 Message Display System

The Message Display System displays the error/warning messages produced by the background. It is able to keep an error history. In the System Monitoring mode it is possible to configure the Message Display System. Thus, warning messages can be suppressed. The Error Message System is accessible through a button in the User Interface.



Message Display

2.2.1.2 Background Processes

The Background Processes are the workhorses of the Processing Station. They take care about:

- Receiving raw CR-images from the Digitizers
- Doing online image processing for the incoming images
- Creating and storing processed images on local storage
- Providing images for the display on the User Interface
- Routing images to the predefined destinations (through Online / Offline channel)
- Creating and sending Preview image
- Storing demographic data in database
- Keeping track of send status of images
- Doing any kind of image reprocessing
- Performing manually initiated transmission jobs from the User Interface
- Controlling “Hold/Proceed” of images

2.2.1.2.1 Overview of Background Activities and Programs

Activity	Programs	Logfile
Receiving images	`IRC_adc_dicom` (for input from ADC Solo or Compact in DICOM protocol) `IRC_adc_enet` (for input from ADC70 / APIP protocol) `IRC_adc_jobs`	IN.... IN.... CNTRL....
Bringing images on-line	`IRC_job_cntrl ONLINE_IP` `IRC_online_ip`	CNTRL.... IP....
Sending images to preview	`IRC_adc_preview`	OUT....

Print images	`IRC_job_cntrl COPY`
	`IRC_job_cntrl PRGEN`
	`IRC_copy`
	`IRC_print_dicom` (for print in DICOM protocol
	`IRC_print_general` (for SMART PRINT feature and non AGFA DICOM Printers)
	`IRC_adc_hardcopy` (for print through online channel)
	`IRC_link_print`
		CNTRL....
		CNTRL....
		IP....
		OUT....
		OUT....
		OUT....
		OUT....

Transmission of images to archive/review by means of DICOM protocol	`IRC_job_cntrl COPY`
	`IRC_copy`
	`IRC_send_dicom`
	`IRC_adc_impax_AS` (online chan.)
	`IRC_adc_impax_RS` (online chan.)
		CNTRL....
		IP....
		OUT....
		OUT....
		OUT....

Transmission of Softcopy images in non DICOM format (NFS)	`IRC_job_cntrl COPY`
	`IRC_copy`
	`IRC_softcopy`
	`IRC_adc_softcopy` (online chan.)
		CNTRL....
		IP....
		IP....
		OUT....

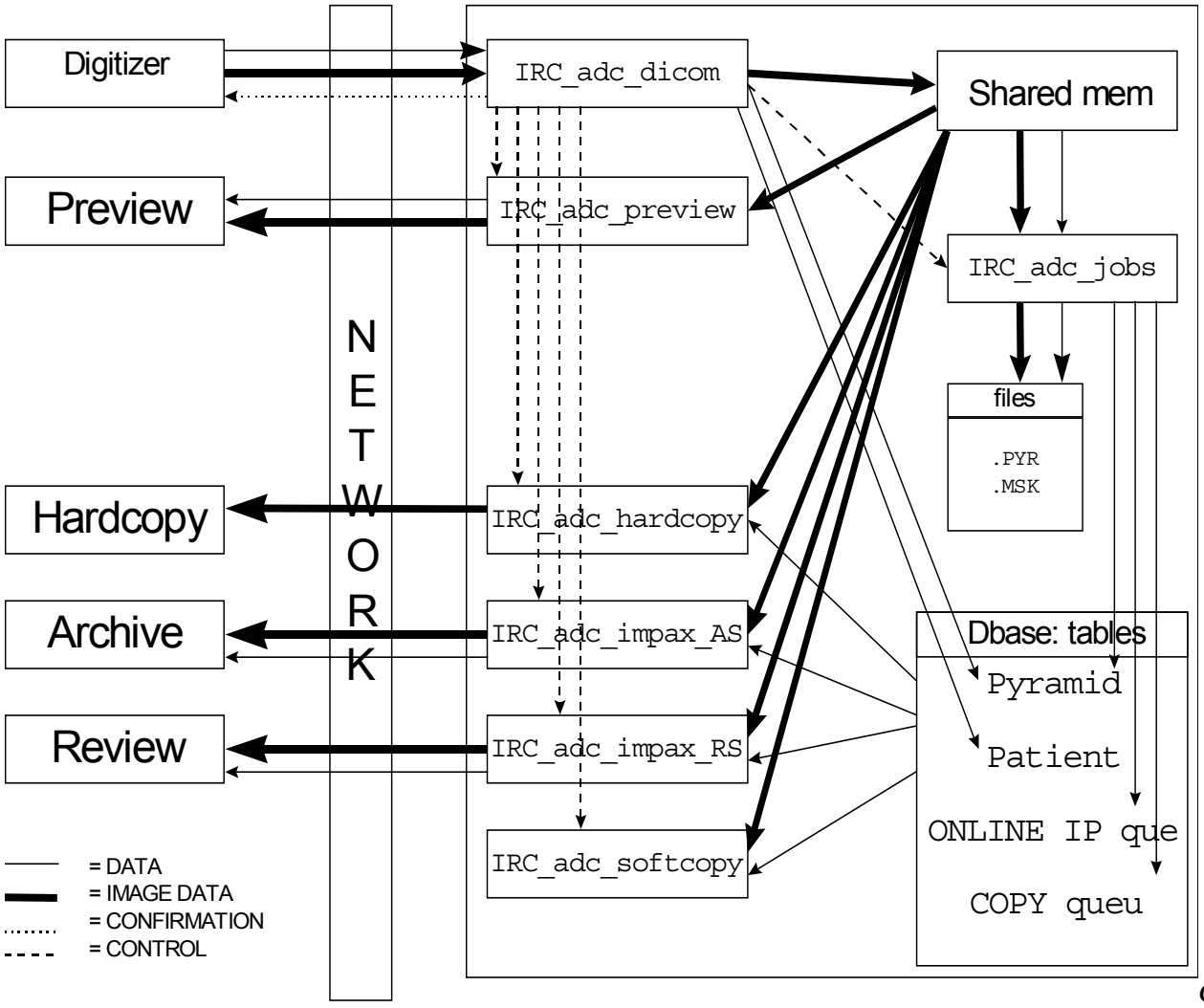
Retry of failed online channel jobs	`IRC_retry_server`	CNTRL....
Managing images with “HOLD” flag set	`IRC_hold_server`	CNTRL....
Managing linked images for print	`IRC_link_server`	CNTRL....
Cleaning up local image storage	`IRC_auto_delete`	CNTRL....

Overview of background activities and programs

Basically, there are two ways of processing images. There is a so called online channel and an offline channel.

2.2.1.2.2 Processing through the On-line Channel

This is the fast lane from input to output. The Preview images are always running through this fast channel. In addition, another destination type can be configured to be processed this way. The advantage of this mode is that the image arrives faster at the configured destinations, because the images are reprocessed on the fly.
However, it does not make sense to configure more than one destination type (although it is possible) for this way of processing as the time gain will decrease then.
Other destinations will be handled by the off-line channel (see later on in this document).
Jobs that are put on “Hold” are always moved to the off-line channel once they get the “Proceed” status.



channel processing

(1) IRC_adc_dicom receives the 12bit raw image and the data of the cassette chip from the Digitizer.

(2) It stores these data in shared memory.

(3) The database table patients is updated with the patient information from the cassette chip. The table pyramids is updated as far as possible. There is no file yet, so the path name is not filled in.

(4) IRC_adc_dicom triggers IRC_adc_jobs to read the data from shared memory.

(5a) IRC_adc_jobs reads the data from shared memory and converts the 12bit raw image file from the Digitizer into an image file with “pyramidal” format. In addition it creates a mask file which contains information about the collimation mask to be applied for display and transmission. These files are stored on the image storage under the directory “G0” and have the file extension “PYR” and “MSK”. In addition, a file with the extension “DBU” is created. This holds all the demographic data belonging to a

certain image. This file is only used as a backup of demographic data because normally the administration of demographic data is done by means of the database.

(5b) IRC_adc_jobs enters also the required data into the database for the background jobs.

(5c) IRC_adc_jobs starts IRC_online_ip.

(6a) IRC_online_ip makes all the files that are required for the User Interface. These files are stored under “G1” (files with extension “HIS” (histogram info), “IMG” (the image in the “Open Image” screen) and “MSK” (a copy of the collimatiom mask)) and “G2” respectively (files with extension “PRL” (image processing info), “RED” (the image in the “Image Thumbnail Browser” screen)).

(6b) IRC_online_ip sends a signal to the User Interface as soon as all these data is available and an update of it is done.

(7) IRC_adc_dicom triggers IRC_adc_preview to generate the preview image.

(8) IRC_adc_preview generates the preview images.

(9) IRC_adc_preview sends the preview images to one or more preview destinations using TCP/IP.

(10) If on-line output is configured, IRC_adc_dicom starts one or more on-line output programs to do their job (IRC_adc_hardcopy, IRC_adc_impax_as IRC_adc_impax_rs, IRC_adc_softcopy).

(11a) These output programs get the image and patient data from shared memory.

(11b) Some processing and routing parameters are read from the database.

(11c) On failure of one of these programs, the data is transmitted to IRC_retry_server. This program will move the failed job to the offline channel.

2.2.1.2.3 Processing through the Off-line Channel

The big difference between Off- and On-line-Channel is that in the Off-Line-Channel the image is stored on the local storage before it is prepared for any output (except preview). Then the activities for the output start.

The steps (1) through (9) are the same as in section “Processing through the On-line channel”

(10) IRC_job_ctrl continuously checks the database for new queue entries created by IRC_adc_jobs.

(11) If a new job is found, IRC_job_ctrl triggers IRC_copy.

(12a) IRC_copy retrieves the demographic data from the database and fetches the image data plus the processing data from the local storage.

(12b) IRC_copy generates a temporary file which is in the appropriate format for the selected destination and stores it in the directory “SPOOL”. The file has the extension “INT”.

(12c) IRC_copy signals IRC_job_ctrl when it has finished its job.

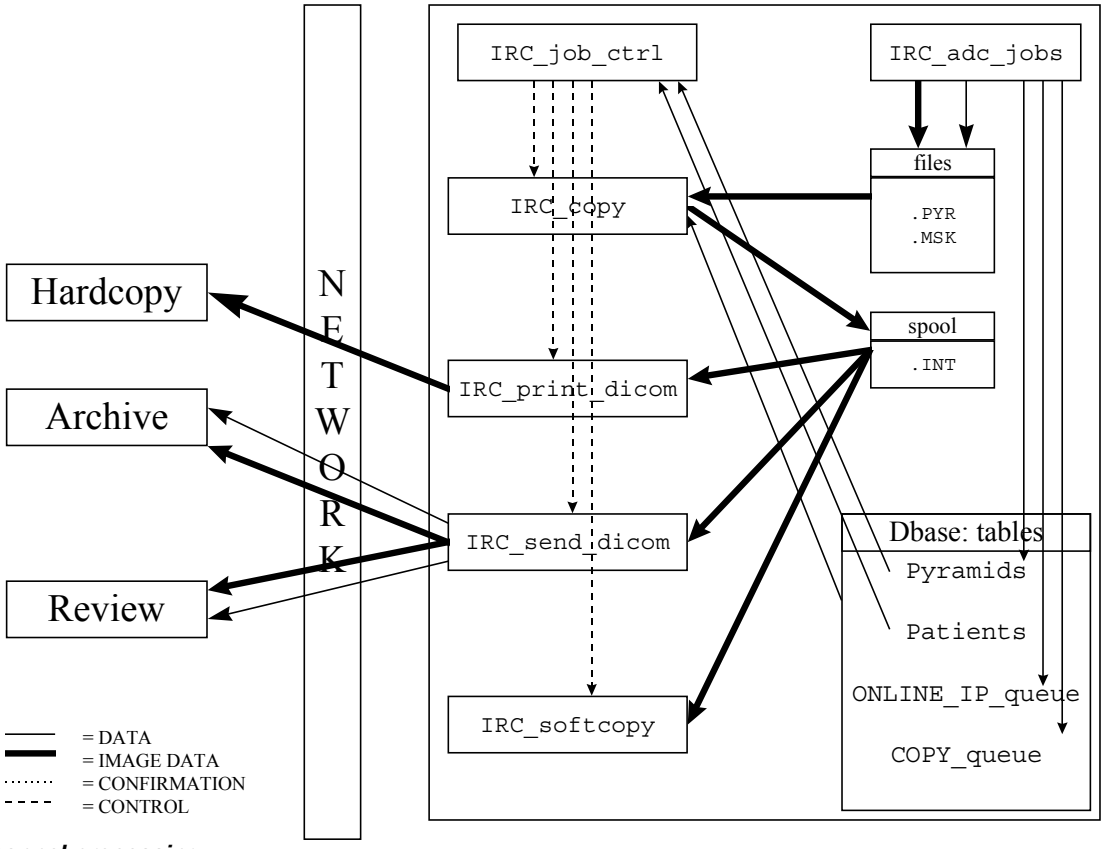
(13) IRC_job_ctrl then triggers IRC_print_dicom (for print destinations), IRC_send_dicom (for DICOM STORE destinations (Archive and Review)) and / or IRC_softcopy (for non DICOM Archive and Review stations) to pick up the file from the directory “SPOOL”.

(14a) IRC_print_dicom (for print destinations), IRC_send_dicom (for DICOM STORE destinations (Archive and Review) and / or IRC_softcopy (for non DICOM Archive and Review stations) then pick up the file from the directory “SPOOL”.

(14b) IRC_print_dicom (for print destinations), IRC_send_dicom (for DICOM STORE destinations (Archive and Review) and / or IRC_softcopy (for non DICOM Archive and Review stations) transmit the file to the selected destination.

(14c) IRC_print_dicom (for print destinations), IRC_send_dicom (for DICOM STORE destinations (Archive and Review) and / or IRC_softcopy (for non DICOM Archive and Review stations) notify IRC_job_cntrl after the job is finshed successfully.

(15) IRC_job_cntrl removes the temporary file from the directory “SPOOL” and clears the copy jobs queue in the database.



Offline channel processing

2.2.1.2.4 Jobs on Hold

If an image (or a set of images (a study in DICOM terminology)) is put on “HOLD”, it is always running through the Off-line Channel. The rerouting to the Off-line channel is done via IRC_adc_jobs.
The Jobs that IRC_adc_jobs creates are all set on ‘HOLD’ in the database table QUEUE_jobs (which is the same as putting the job on “Hold” via the User Interface of the Processing Station).
The hold status is controlled by the IRC_hold_server. The hold status is signaled to the preview stations by the IRC_hold_server. If this notification arrives, the ‘Cancel’ and the ‘Proceed’ button are visible.
The job is either then

- automatically released after a time-out period by IRC_hold_server (default: 300sec).
- released after activating ‘PROCEED’ on any Preview Station.
- deleted after activating ‘CANCEL’ on any Preview Station.

Proceed and cancel of an image is not signaled to other Preview Stations. They can no longer change anything about the status either.

2.2.1.2.5 Linked Images

The “Link” mode is used to print two images on one film via “Autorouting”. The user just has to identify the cassettes as to be “linked’.
As soon as IRC_adc_dicom receives the first image of the images to be linked, the IRC_link_server is notified. It then takes over the control of the image jobs to be linked on one film.
Printing is initiated as soon as the images to be linked are received, or after a time-out period. Then IRC_link_server triggers IRC_link_print, which in turn sends the job to a printer destination.

2.2.1.2.6 Print / sent / archived Status Flags

For each image the Processing Station keeps track if it was already printed, sent or archived. This is done by means of status flags. Consequently there must exist three types of this flags:

- A “Print” flag for the hardcopy destination type
- A “Sent” flag for the review destination type (both DICOM-STORE and non DICOM destinations)
- An “Archive” flag for the archive destination type.

Once an image is reprocessed by means of the User Interface in any kind and this changes are saved all the flags are reset and the reprocessed version of that image is regarded as not sent, not archived and not printed.
The status history of an image is recorded in a file which is under the directory “G0”. This file has the extension “STS”.
In the User Interface there are just two possible statuses per destination type: the flag is set or it is not set. (printed / not printed; sent / not sent; archived / not archived). However, internally the Processing Station knows four statuses:

Internal status	Status in User Interface	Explanation
Idle	Status flag not set	No (or no successful) transmission has been done for this image to a destination of this group
Blocked	Status flag not set	The job was put on hold
Active	Status flag set	The internal status “Active” is only used if image transmissions are initiated from the User Interface. For the user the flag marks immediately after he starts a transmission the image as sent. However if the transmission fails the internal flag is reset to “Idle” and after some time the status flag in the User Interface is reset too.
Done	Status flag set	If a image transmission has been finished successfully the internal status is set to “Done”. For this version of the image no reset of flags is possible anymore.

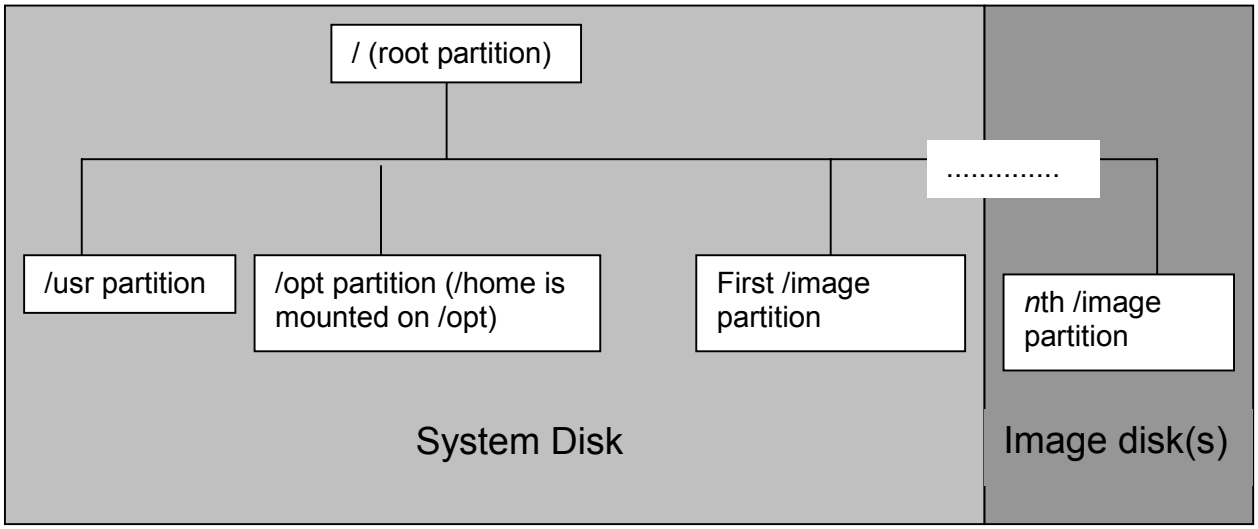
Print / send / archived status flags

Images automatically routed to an output skip the internal status “Active”. There the internal flag goes directly from “Idle” to “Done” when the image arrived successfully at the predetermined destination.

2.2.2 Hard Disk Partition Structure of the Processing Station

The partition structure of the Processing Station reflects the three major “data” types stored in it:

- The operating system software
- The application and database software
- The image data



Hard disk partitions

The System Disk always holds the

- Root partition
- “/usr” partition
- “/opt” or “/home” partition
- The first “/images” partition

At least this partition structure has to be available to make a Processing Station work. The additional image disks only hold images and are an option to the Processing Station.

2.2.2.1 The Root and “/usr” Partition

The root and “/usr” partitions hold the complete operating system (Solaris) plus the XWindows and the OSF Motif / CDE Window Manager. Here the operating system configuration files are kept. In addition, some system logfiles, which can be used for troubleshooting, are stored on these partitions.

2.2.2.2 The /opt (or /home) Partition

The /opt (or /home) partition holds the database and the AGFA application software MIMOSA. These packages are stored under the subdirectories “oracle” and “mimosa”. The “mimosa” directory contains a lot of subdirectories which contain:

- Background and foreground programs
- Logfiles
- Configuration files for the MIMOSA application
- Service Tools
- Language files

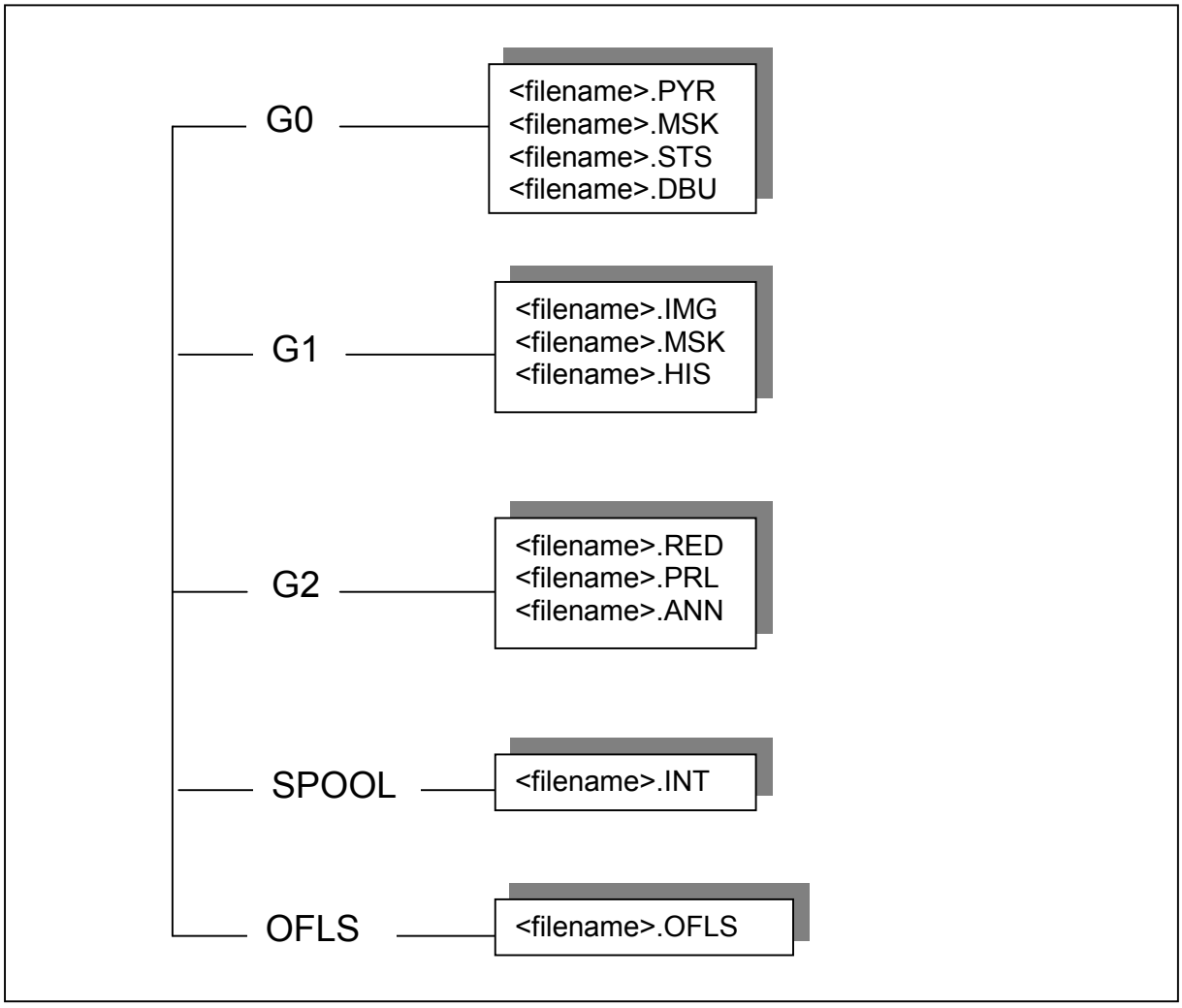
As there are service tools provided which allow to do the service tasks in a convenient and comfortable way it normally is not necessary to work on operating system level.

2.2.2.3 The /image Partition(s)

The /image partition(s) are the local storage for image data. Minimum you need one /image partition which normally is made up from the remaining space of the System Disk. However you can enhance the image storage up to max. 27GB.

The Processing Station is just meant for short term storage (about one or two weeks). It is not an archiving station. In addition, the more images the system has to manage the slower it gets.

The image file structure is built up in a hierarchical way. There are multiple image partitions (i.e. disk parts on which images may be stored), called /images through /imagesN where N is a number incremented for each new image partition. Each of these image partitions contains four directories : G0, G1, G2, SPOOL (and OFLS, on '/images' only). No other files are allowed here!



The image partition

2.2.2.3.1 G0 Directory

The 12-bit raw images received by the Processing Station are converted into a pyramidal format. They get the extension .PYR and are stored in the G0 directory. Once a pyramidal file is created and stored it cannot be changed anymore.
The name of these files is built up of two parts: a character part and a number part separated with a '_', followed by the extension .PYR. The character part is the patients last name. The number part is a sequence number that increments each time an image with the same name arrives in the Processing Station (e.g.: JONES_0.PYR, JONES_1.PYR and so forth). This sequence number is called the G0 version number.

File Type	Contents	Example
<filename>.PYR	Image raw data converted into pyramidal format	JONES_0.PYR
<filename>.MSK	Created by the online image processing if a collimation mask is detected. It contains the mask data.	JONES_0.MSK
<filename>.STS	Contains status information about the send status of the image.	JONES_0.STS
<filename>.DBU	Contains a backup of the demographic data record for a certain image.	JONES_0.DBU

File types stored under G0

2.2.2.3.2 G1 Directory

The G1 directory contains image files derived from the pyramidal file. This files are just used by the User Interface in the “Open Image” screen.
The name of these files is built up in three parts : a character part and two number parts, all separated with a '_', followed by the extension. The character part and the first number part are identical to the G0 filename where this file is derived from. The second number part is a sequence number that increments each time a file of the same type is derived from the G0 file. This sequence number is called the G1 version number.
During online image processing the first set of the G1-files is created automatically. The files created by the online image processing always have the “0” in the G1 version number.
There can exist multiple derived files from one pyramidal file. Reprocessing an image in the User Interface does not create an new pyramidal file but only alters or adds files in G1 or G2. Where depends on the kind of reprocessing.

File Type	Contents	Example
<filename>.IMG	Derived from the pyramidal file. Fully processed 8-bit image file for display in the “Open Image” screen	JONES_0_0.IMG
<filename>.MSK	Contains collimation mask data. A new one is created for every new “.IMG” file.	JONES_0_0.MSK
<filename>.HIS	Histogram data belonging to an “.IMG” file	JONES_0_0.HIS

File types stored under G1

2.2.2.3.3 G2 Directory

The G2 directory contains image files derived from the G1 files. This files are used by the User Interface in the “Image Thumbnail” Browser.
The name of these files is build up in four parts : a character part and three number parts, all separated with a '_', followed by the extension. The character part and the first two number parts are identical to the G1 filename where this file is derived from. The third number part is a sequence number that increments each time a file of the same type is derived from the G1 file. This sequence number is called the G2 version number.
During online image processing the first set of the G2-files is created automatically The files created by the online image processing always have the “0” in the G2 version number.
There can exist multiple derived files from one pyramidal file. Reprocessing an image in the User Interface does not create an new pyramidal file but only alters or adds files in G1 or G2. Where depends on the kind of reprocessing.

File Type	Contents	Example
<filename>.RED	Derived from the IMG file. Reduced image file for display in the “Image Thumbnail” Browser	JONES_0_0_0.IMG
<filename>.PRL	Contains information about processing, W/L settings, image orientation for that specific image.	JONES_0_0_0.PRL
<filename>.ANN	Contains annotations which have been applied on that image. This file only exists for images where annotations have been applied.	JONES_0_0_0.ANN

File types stored under G2

2.2.2.3.4 SPOOL Directory

The SPOOL directory contains temporary files. This directory should be empty when the system is in rest. Here the temporary images files are stored after processing and before they are transmitted to a certain destination.
When transmission completed successfully, these files are removed. The name of these files is a sequence number which increments each time an temporary image is stored.

File Type	Contents	Example
<filename>.INT	Temporary image file to be sent to an output destination. Converted into a format which is appropriate for that destination.	1234.INT

File types stored under SPOOL

2.2.2.3.5 OFLS Directory

Sometimes also the OFLS directory can be found on the image partition. In this directory normally exported files are stored. This files can later on be transferred to other Processing Stations to be imported there again.
The OFL-files are mostly used for troubleshooting purposes. However one should not keep to many of the OFL-files on the image partition since they reduce space for other images.
The naming is based on the pyramidal file. Just the extension is changed to OFL.

File Type	Contents	Example
<filename>.OFL	Contains all demographic and image data to re-imported it into another Processing Station.	JONES_0.OFL

File types stored under OFLS

2.2.2.4 Automatic Deletion of Images

On the Processing Station a program is running which takes care that always enough image disk space is available for new incoming images. This process is called IRC_autodelete.
It automatically removes the oldest images from the image disks unless they are not explicitly locked by the user.
Approximately every 5min IRC_autodelete checks all the image disks for enough space. This is done according to internal parameters in the MIMOSA software.
However IRC_autodelete does only check the directories G0 through G2. All other data stored on an image partition is not checked and therefore reduces the actual image storage capacity.